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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,509	06/09/2006	Kiyoshi Miyashita	396.46268X00	2895
20457 7590 05/12/2009 ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873				
EXAMINER HAILEY, PATRICIA L				
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1793				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/582,509

**Applicant(s)**

MIYASHITA ET AL.

**Examiner**

PATRICIA L. HAILEY

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 4-19 is/are pending in the application.
- 4a) Of the above claim(s) 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Applicants' remarks and amendments, filed on February 4, 2009, have been carefully considered. Claims 2 and 3 have been canceled; new claims 18 and 19 have been added.

Claims 1 and 4-19 are now pending in this application.

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Documents were filed on June 9, 2006.

***Election/Restrictions***

2. Newly submitted claim 19 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Claim 19 is directed to a method of producing a concentrated metal nanocolloidal liquid, which is independent and distinct from originally presented inventions (a) a metal nanocolloidal liquid and (b) a method for producing a metal-on-carrier.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 19 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claims 1 and 4-18 are under consideration by the Examiner.

***Withdrawn Rejections***

The 102(b) rejections of (a) claims 1, 3, 5-12, 16, and 17 as being anticipated by Shipley, Jr. (U. S. Patent No. 3,011,920) and (b) claims 1-7 and 17 as being anticipated by Stiles (U. S. Patent No. 3,230,034), stated in the previous Office Action, have been withdrawn in view of Applicants' amendments to claim 1.

***New Grounds of Rejection***

The following New Grounds of Rejection are being made in view of Applicants' amendment to claim 1, and in view of the Examiner's reconsideration of the references of record.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**6. *Claims 1, 5-12, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shipley, Jr. (U. S. Patent No. 3,011,920).***

Shipley, Jr. teaches a colloidal metal solution comprising metal colloid particles dispersed in a liquid medium, such as water. See claims 1 and 2 of Shipley, Jr.

Shipley, Jr. also discloses the electroless metal deposition of an adherent metal coating onto a substrate (such as a plastic panel which may have a metal foil laminated to one or both of its surfaces to form a metal clad substrate; considered to read upon the limitation "carrier" in **claim 16**). See col. 1, lines 1-48 of Shipley, Jr. (considered to read upon **claims 7, 8, 10, and 11**).

Deposition onto the substrate is done by treatment with a bath containing colloidal particles of a catalytic metal, and thereafter plating the substrate by treatment with a deposition solution (considered to read upon the limitation "metal-on carrier" as recited in **claim 17**). The deposition solution usually comprises salts of metals such as

gold or members of the platinum family and a reducing agent therefor, and the colloidal particles may comprise metals such as platinum, palladium, or gold. See col. 2, lines 21-55 of Shipley, Jr. (considered to read upon **claims 5 and 9**; although this excerpt discloses that it is *preferred* that the colloidal solution also contain a protective colloid and/or a deflocculating agent, its presence is not deemed required).

At col. 2, lines 56-63 of Shipley, Jr., the reference teaches that superior process results are obtained from the preparation of colloidal solutions of a desired catalytic metals, treating the substrate by immersion or spraying with the colloidal solution, followed by the subsequent introduction into the appropriate plating bath. This disclosure is considered to read upon **claim 12**.

The Examples of Shipley, Jr. depict exemplary solutions containing, for example, palladium chloride, water, HCl, and tin chloride, wherein colloidal platinum is formed by the reduction of the palladium ions by the tin chloride (col. 3, lines 1-10). This disclosure is considered to read upon **claims 1, 6 and 12**, as the protective colloid is not reduced to carbon, and in view of Applicants' lower limit of "0... mass ppm total carbon with respect to the nanocolloidal metal particles".

Further, Shipley, Jr. at col. 5, lines 30-36 state:

"Where the colloidal solutions contain these additional stabilizing substances, the process of deposition based thereon can be accelerated by intermediate treatment of the substrate, after catalysis and before deposition, with a solvent which will remove the protective colloid and/or the deflocculating agent from the colloidal particles of catalytic metal on the substrate surface."

This disclosure is considered to read upon the limitation "substantially no protective colloid-forming agent". Further, although Shipley, Jr. is silent as to the amount of protective colloid-forming agent as reduced to carbon, the skilled artisan would reasonably expect that the removal of the protective colloid taught by Shipley, Jr. would result in an amount as reduced to carbon to a total carbon amount of at least 0, absent the showing of convincing evidence to the contrary.

Regarding the claimed metal particle concentrations recited in **claims 1 and 18**, the Examples of Shipley, Jr., e.g., Examples 1 and 3, teach exemplary solutions wherein, given the density of HCl, the metal particle concentrations are in amounts falling within the range of "250 mass ppm or more":

Example 1:

$$[\rho_{\text{HCl}} (1.19) \times 300 \text{ ml}] + [(600 \text{ ml H}_2\text{O} \times \rho_{\text{H}_2\text{O}} (1.0))] + [(50\text{g} \times \rho_{\text{PdCl}_2} (4))] + [1 \text{ g} \times \rho_{\text{SnCl}_2} (3.95)] = 1160.95 \text{ g}$$

$$[51 \text{ g (PdCl}_2 + \text{SnCl}_2) / 1160.95] \times 1,000,000 = 43929.54 \text{ mass ppm}$$

Example 4, omitting sodium stannate (which is optional):

$$[\rho_{\text{HCl}} (1.19) \times 300 \text{ ml}] + [(600 \text{ ml H}_2\text{O} \times \rho_{\text{H}_2\text{O}} (1.0))] + [(1 \text{ g} \times \rho_{\text{H}_2\text{PtCl}_6} (2.431))] + [37.5 \text{ g} \times \rho_{\text{SnCl}_2} (3.95)] = 1107.556 \text{ g}$$

$$[38.5 (\text{H}_2\text{PtCl}_6 + \text{SnCl}_2) / 1107.556] \times 1,000,000 = 34761.222 \text{ mass ppm}$$

**7. Claims 1, 4-7, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stiles (U. S. Patent No. 3,230,034).**

Stiles teaches catalytic materials in substantially colloidal form, said materials in the form of particles of size no greater than 1500 angstroms (150 nm) or more preferably no greater than 100 angstroms (10 nm). See col. 1, lines 47-55 of Stiles (considered to read upon **claim 4**).

Stiles also teaches the formation of a dispersion of the catalytic material in a liquid medium such as water, acetone, alcohols, cyclohexane, benzene or any other inert liquid. See col. 2, lines 31-36 of Stiles (considered to read upon the limitation "aqueous medium" in **claim 6**).

At col. 2, lines 44-50 of Stiles, reference is made to the preparation of colloidal dispersions of silica in water containing chloroplatinic acid, and the chloroplatinic acid can be reduced to platinum with reducing agents such as formaldehyde or methanol, which gives metallic platinum colloiddally dispersed upon particles of silica (which serves as an interspersant). This disclosure is considered to read upon **claims 1, 3, 5, 7, and 17**.

The interspersant (e.g., silica) can be used in widely varying amounts from 0.1% to 95% based upon the total weight of solids in the final precipitate or mixture of catalyst plus interspersant. See col. 7, lines 12-26 of Stiles; this disclosure is considered to read upon the limitation "metal particle concentration of 250 mass ppm or more" recited in **claim 1** and the limitation "metal particle concentration of 250 to 3000 mass ppm" recited in **claim 18**, as one percent equals 10,000 ppm:



$$0.1 \text{ percent } (0.001) \times (10,000 \text{ ppm}/1 \text{ percent}) = 10 \text{ ppm}$$

$$95 \text{ percent } (0.95) \times (10,000 \text{ ppm}/1 \text{ percent}) = 9500 \text{ ppm}$$

Although Stiles is silent as to the amount of protective colloid-forming agent as reduced to carbon, or the presence of a protective colloid-forming agent, the skilled artisan would reasonably expect that the removal of the protective colloid taught by Stiles would result in an amount as reduced to carbon to a total carbon amount of at least 0, absent the showing of convincing evidence to the contrary.

### ***Response to Arguments***

In response to Applicants' arguments that the cited references of record fail to teach or suggest the claimed suggestion, the Examiner respectfully submits that Applicants have not explicitly shown how or why the art of record teaches away from the claimed invention. The bulk of Applicants' arguments are directed to the instant claims and to the Specification, and do not clearly discuss how the cited references teach away from the invention as presently claimed.

As stated in the above rejection, although Shipley, Jr., states that it is preferred that the colloidal solution also contain a protective colloid, the Examiner respectfully submits that the skilled artisan would readily deduce that, in view of this teaching, that the presence of the protective colloid is not a requirement.

In response to Applicants' arguments regarding the reference to Stiles, the Examiner respectfully submits that, because this reference "provides no limitation concerning protective colloid-forming agent", the skilled artisan would consider the

teachings of Stiles to read upon Applicants' claim limitation "substantially no protective colloid-forming agent".

In response to Applicants' arguments regarding this reference's failure to teach the claimed metal particle concentration, the Examiner respectfully points Applicants to the above rejection of claims 1, 4-7, 17, and 18 in view of Stiles.

For these reasons, Applicants' arguments are not persuasive.

***Allowable Subject Matter***

8. Claims 13-15 remain objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICIA L. HAILEY whose telephone number is (571)272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.A. LORENZO/  
Supervisory Patent Examiner, Art Unit 1793

/PATRICIA L. HAILEY/  
Examiner, Art Unit 1793  
May 4, 2009